Light-Harvesting Antenna: Detection of Polyaromatic Molecules by Supramolecular Fibers

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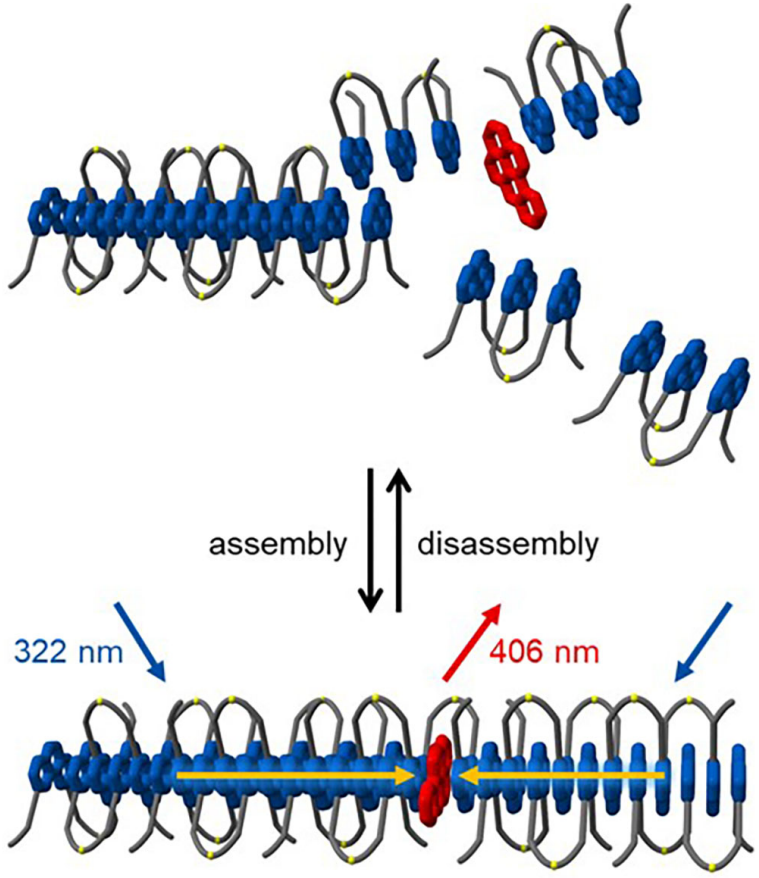
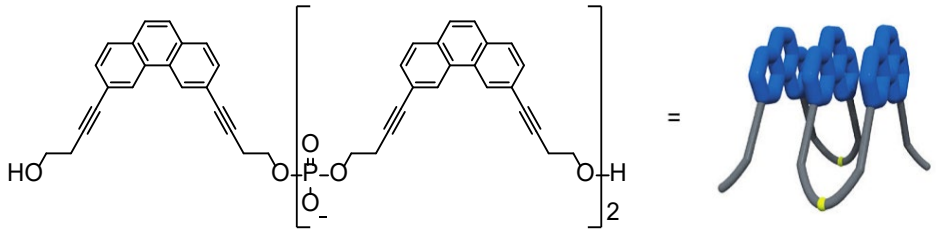
Introduction





oligomer **A**

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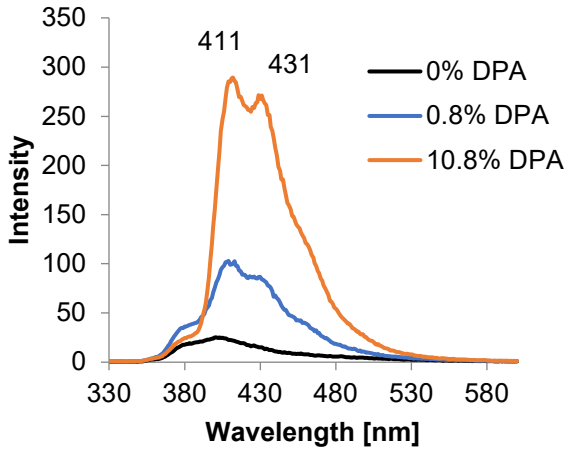
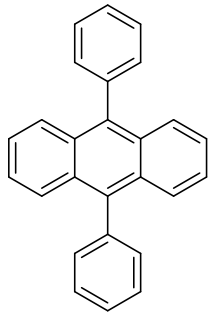
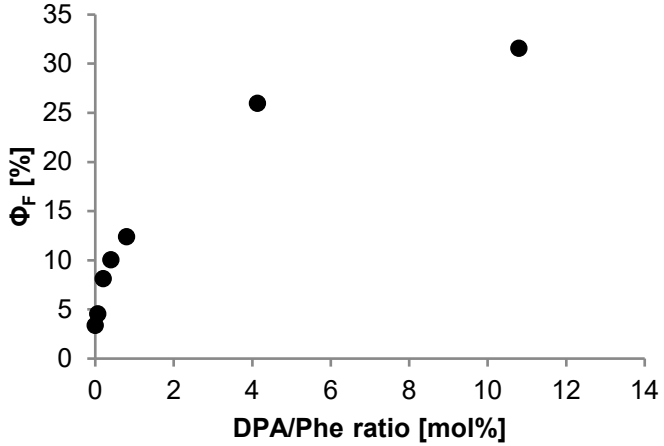
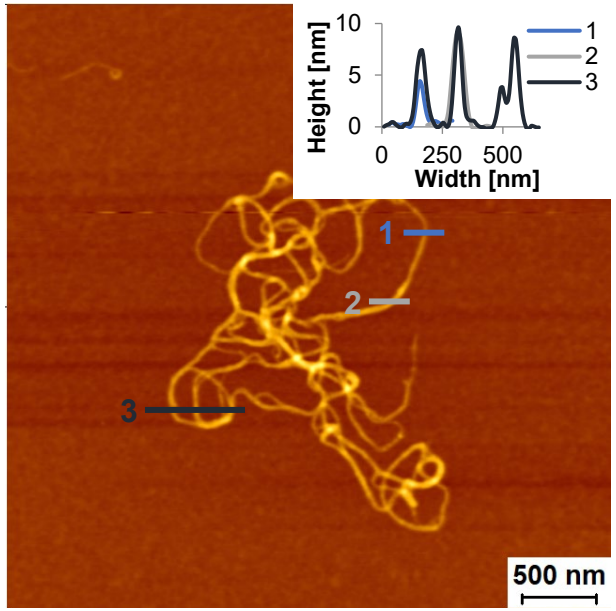
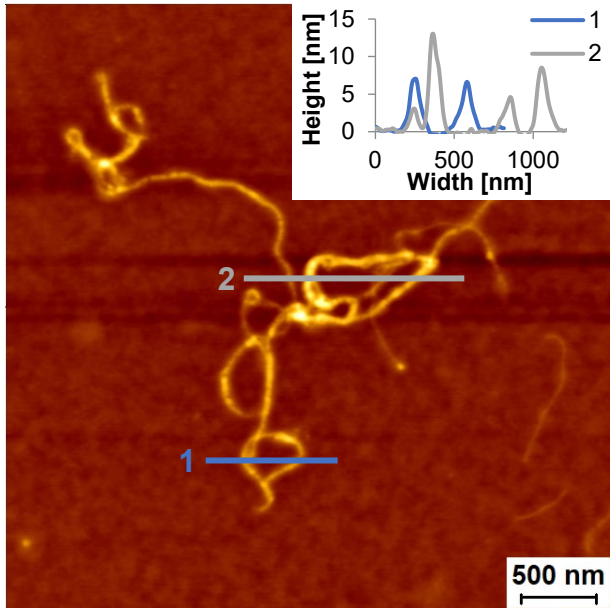
Fluorescence and AFM Measurements











Conditions: oligomer **A** 0.5 µM, 10 mM sodium phosphate buffer, pH 7.2, λ_{ex} = 322 nm.

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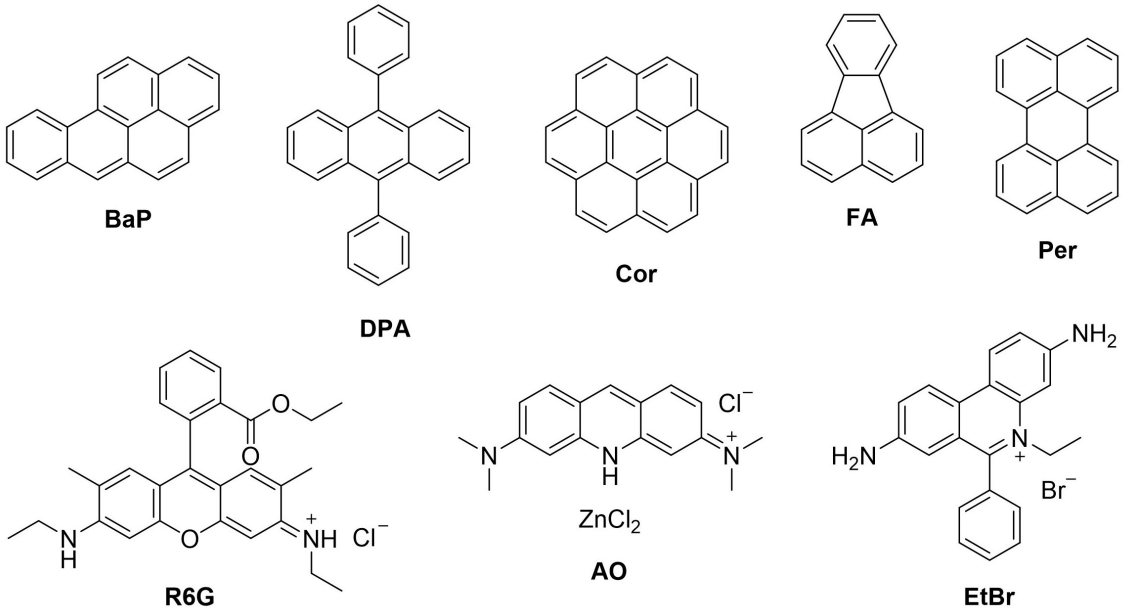
Other Acceptor Molecules

Chromophore	Fluorescence Quantum Yield (Φ_F) at a ca. 1 mol-% acceptor/Phe ratio [%]
benzo(a)pyrene (**BaP**)	12.6[b]
9,10-diphenylanthracene (**DPA**)	12.4[a]
coronene (**Cor**)	6.7[a]
fluoranthene (**FA**)	5.8[b]
perylene (**Per**)	4.0[a]
rhodamine 6G (**R6G**)	14.3[c]
acridine orange (**AO**)	10.1[a]
ethidium bromide (**EtBr**)	3.1[d]

[a] 0.8 mol-%. [b] 1 mol-%. [c] 1.1 mol-%. [d] 1.2 mol-%.



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Conclusions

- An efficient light-harvesting system was formed by doping supramolecular phenanthrene fibers with different types of acceptor chromophores in aqueous medium.
- The addition of acceptors resulted in an increased Φ_F.
  - highest Φ_F : rhodamine 6G (14.3% at 1.1 mol-% doping)
- AFM measurements showed that no morphological changes occur to the fibers after doping them with different acceptors.

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